

EXHIBIT 9

Part 2

FILED UNDER SEAL

US Patent No.: 9,219,959; 90/013,756

In Litigation

Re-Examined

SONOS

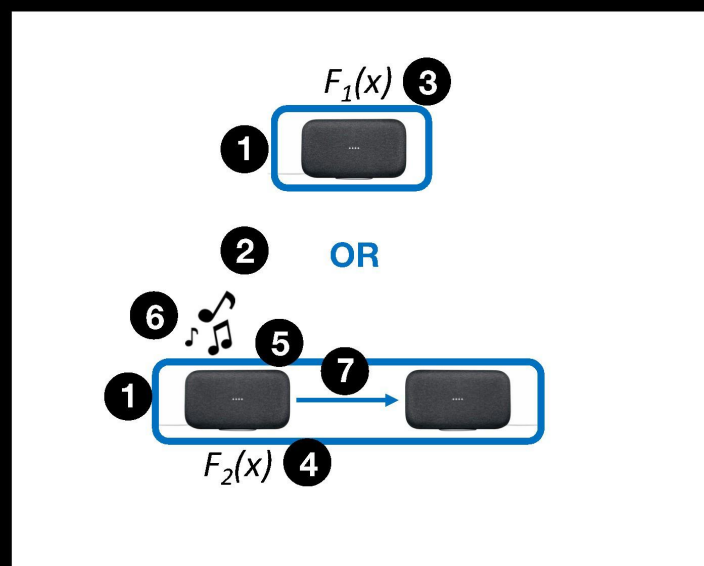
Title: Multi-channel pairing in a media system

Priority Date: 1/25/2011

Issue Date: 12/22/2015; 4/5/2017

This patent involves a playback device:

1. Processing audio data before output.
2. Determining a type of pairing of the playback device.
3. Configuring playback device to perform first EQ if first type of pairing.
4. Configuring playback device perform second EQ if second type of pairing.
5. Separating the audio into separate channels.
6. Outputting at least one channel.
7. Transmitting at least one additional separate channel.



Multi-channel pairing in a media system

U.S. Patent No. 9,219,959 (90/013,756); 1/25/2011

In Litigation

Re-Examined

9. A playback device configured to...:

(i) process the audio data before the playback device outputs audio from the plurality of speaker drivers,

(ii) determine that a type of pairing of the playback device comprises one of at least a first type of pairing or a second type of pairing,

(iii) configure the playback device to perform a first equalization of the audio data before outputting audio based on the audio data from the plurality of speaker drivers when the type of pairing is determined to comprise the first type of pairing,

(iv) configure the playback device to perform a second equalization of the audio data before outputting audio based on the audio data from the plurality of speaker drivers when the type of pairing is determined to comprise the second type of pairing,

(v) separate the audio data into separate audio channels,

(vi) output audio based on audio data of at least one separate audio channel from the plurality of speaker drivers, and

(vii) transmit at least one additional separate audio channel over the network.

* see claim 9 of U.S. Patent 9,219,959 for complete claim language



Google Home Max receives audio data and processes the audio data before outputting audio.

Multi-channel pairing in a media system

U.S. Patent No. 9,219,959 (90/013,756); 1/25/2011

In Litigation

Re-Examined

9. A playback device configured to...:

(i) process the audio data before the playback device outputs audio from the plurality of speaker drivers,

(ii) determine that a type of pairing of the playback device comprises one of at least a first type of pairing or a second type of pairing,

(iii) configure the playback device to perform a first equalization of the audio data before outputting audio based on the audio data from the plurality of speaker drivers when the type of pairing is determined to comprise the first type of pairing,

(iv) configure the playback device to perform a second equalization of the audio data before outputting audio based on the audio data from the plurality of speaker drivers when the type of pairing is determined to comprise the second type of pairing,

(v) separate the audio data into separate audio channels,

(vi) output audio based on audio data of at least one separate audio channel from the plurality of speaker drivers, and

(vii) transmit at least one additional separate audio channel over the network.

* see claim 9 of U.S. Patent 9,219,959 for complete claim language



OR



Multi-channel pairing in a media system

U.S. Patent No. 9,219,959 (90/013,756); 1/25/2011

In Litigation

Re-Examined

9. A playback device configured to...:

(i) process the audio data before the playback device outputs audio from the plurality of speaker drivers,

(ii) determine that a type of pairing of the playback device comprises one of at least a first type of pairing or a second type of pairing,

(iii) configure the playback device to perform a first equalization of the audio data before outputting audio based on the audio data from the plurality of speaker drivers when the type of pairing is determined to comprise the first type of pairing,

(iv) configure the playback device to perform a second equalization of the audio data before outputting audio based on the audio data from the plurality of speaker drivers when the type of pairing is determined to comprise the second type of pairing,

(v) separate the audio data into separate audio channels,

(vi) output audio based on audio data of at least one separate audio channel from the plurality of speaker drivers, and

(vii) transmit at least one additional separate audio channel over the network.

* see claim 9 of U.S. Patent 9,219,959 for complete claim language



In the first type of pairing, Max performs a first equalization before outputting audio.

Multi-channel pairing in a media system

U.S. Patent No. 9,219,959 (90/013,756); 1/25/2011

In Litigation

Re-Examined

9. A playback device configured to...:

(i) process the audio data before the playback device outputs audio from the plurality of speaker drivers,

(ii) determine that a type of pairing of the playback device comprises one of at least a first type of pairing or a second type of pairing,

(iii) configure the playback device to perform a first equalization of the audio data before outputting audio based on the audio data from the plurality of speaker drivers when the type of pairing is determined to comprise the first type of pairing,

(iv) configure the playback device to perform a second equalization of the audio data before outputting audio based on the audio data from the plurality of speaker drivers when the type of pairing is determined to comprise the second type of pairing,

(v) separate the audio data into separate audio channels,

(vi) output audio based on audio data of at least one separate audio channel from the plurality of speaker drivers, and

(vii) transmit at least one additional separate audio channel over the network.



In the second type of pairing, Max performs a second equalization before outputting audio.

* see claim 9 of U.S. Patent 9,219,959 for complete claim language

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Confidential and Subject to FRE 408

45

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SONOS-SVG2-00043249

Multi-channel pairing in a media system

U.S. Patent No. 9,219,959 (90/013,756); 1/25/2011

In Litigation

Re-Examined

9. A playback device configured to...:

(i) process the audio data before the playback device outputs audio from the plurality of speaker drivers,

(ii) determine that a type of pairing of the playback device comprises one of at least a first type of pairing or a second type of pairing,

(iii) configure the playback device to perform a first equalization of the audio data before outputting audio based on the audio data from the plurality of speaker drivers when the type of pairing is determined to comprise the first type of pairing,

(iv) configure the playback device to perform a second equalization of the audio data before outputting audio based on the audio data from the plurality of speaker drivers when the type of pairing is determined to comprise the second type of pairing,

(v) separate the audio data into separate audio channels,

(vi) output audio based on audio data of at least one separate audio channel from the plurality of speaker drivers, and

(vii) transmit at least one additional separate audio channel over the network.



Max separates the audio data into separate channels, outputs one of the channels, and transmits at least one of the other channels to another Max.

* see claim 9 of U.S. Patent 9,219,959 for complete claim language

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Confidential and Subject to FRE 408

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SONOS-SVG2-00043250

US Patent No.: 9,202,509; 90/013,859

In Litigation

Re-Examined

SONOS

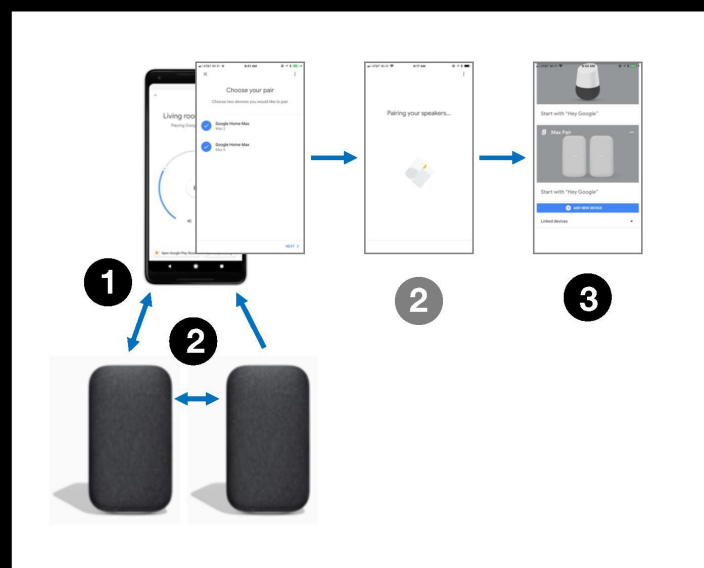
Title: Controlling and grouping in a multi-zone media system

Priority Date: 1/25/2011

Issue Date: 12/1/2015; 5/30/2017

This patent involves a controller device:

1. Identifying a plurality of playback devices on a LAN.
2. Instructing at least a first playback device of the plurality to request audio stream and split the stream into a first and second channel, wherein the first playback device is configured to play the first channel and a second playback device in the plurality is configured to play the second channel.
3. Displaying an indication that each of the playback devices are configured to produce a respective channel.



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SONOS-SVG2-00043251

Controlling and grouping in a multi-zone media system

U.S. Patent No. 9,202,509 (90/013,859); 1/25/2011

In Litigation

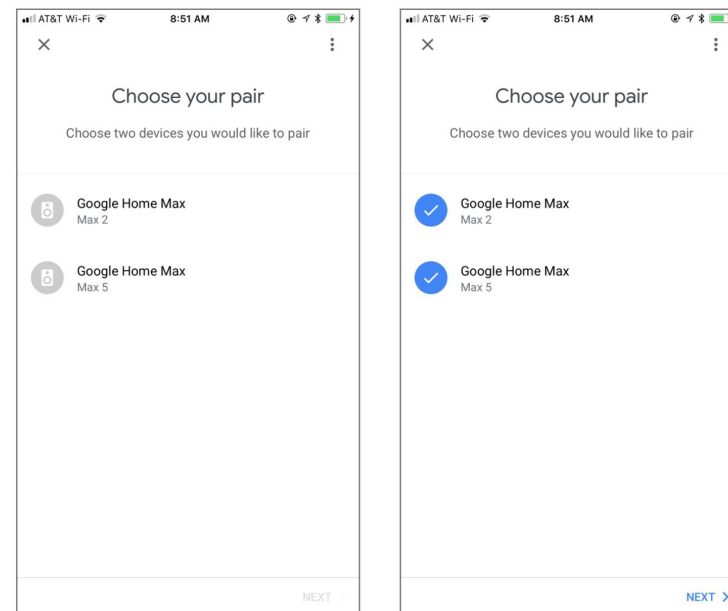
Re-Examined

1. A method comprising:

identifying, via a controller, a plurality of playback devices on a local area network (LAN), ...;

instructing, via the controller over the LAN, at least one of the plurality of playback devices to process the requested audio data stream into at least one of a first and a second channel of the requested audio data stream and to reproduce a respective one of the first and the second channel, ..., such that a first playback device in [a] group of the plurality of playback devices is configured as part of the group to reproduce the first channel of the requested audio data stream for the group and a second playback device in the group ... is configured as part of the group to reproduce the second channel of the requested audio data stream for the group; and

displaying, via the controller, an indication that each of the plurality of playback devices is configured to reproduce a respective channel.



When initiating stereo pair, the Google Home application identifies devices on the network that are available for pairing.

* see claim 1 of U.S. Patent 9,202,509 for complete claim language

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SONOS-SVG2-00043252

Controlling and grouping in a multi-zone media system

U.S. Patent No. 9,202,509 (90/013,859); 1/25/2011

In Litigation

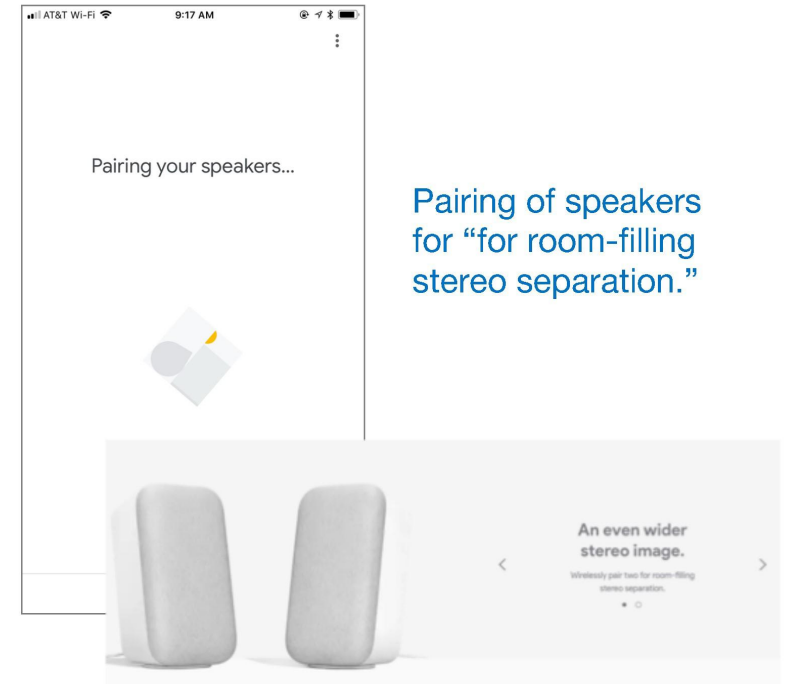
Re-Examined

1. A method comprising:

identifying, via a controller, a plurality of playback devices on a local area network (LAN), ...;

instructing, via the controller over the LAN, at least one of the plurality of playback devices to process the requested audio data stream into at least one of a first and a second channel of the requested audio data stream and to reproduce a respective one of the first and the second channel, ..., such that a first playback device in [a] group of the plurality of playback devices is configured as part of the group to reproduce the first channel of the requested audio data stream for the group and a second playback device in the group ... is configured as part of the group to reproduce the second channel of the requested audio data stream for the group; and

displaying, via the controller, an indication that each of the plurality of playback devices is configured to reproduce a respective channel.



* see claim 1 of U.S. Patent 9,202,509 for complete claim language

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SONOS-SVG2-00043253

Controlling and grouping in a multi-zone media system

U.S. Patent No. 9,202,509 (90/013,859); 1/25/2011

In Litigation

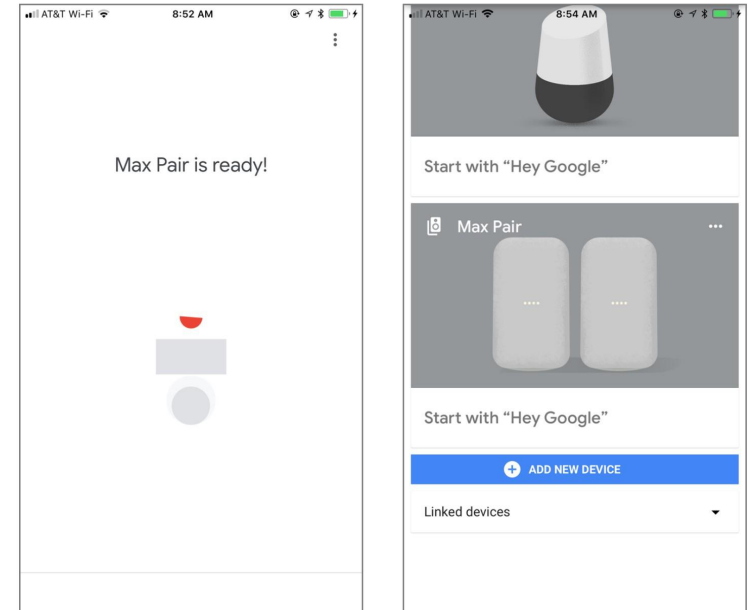
Re-Examined

1. A method comprising:

identifying, via a controller, a plurality of playback devices on a local area network (LAN), ...;

instructing, via the controller over the LAN, at least one of the plurality of playback devices to process the requested audio data stream into at least one of a first and a second channel of the requested audio data stream and to reproduce a respective one of the first and the second channel, ..., such that a first playback device in [a] group of the plurality of playback devices is configured as part of the group to reproduce the first channel of the requested audio data stream for the group and a second playback device in the group ... is configured as part of the group to reproduce the second channel of the requested audio data stream for the group; and

displaying, via the controller, an indication that each of the plurality of playback devices is configured to reproduce a respective channel.



* see claim 1 of U.S. Patent 9,202,509 for complete claim language

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SONOS-SVG2-00043254

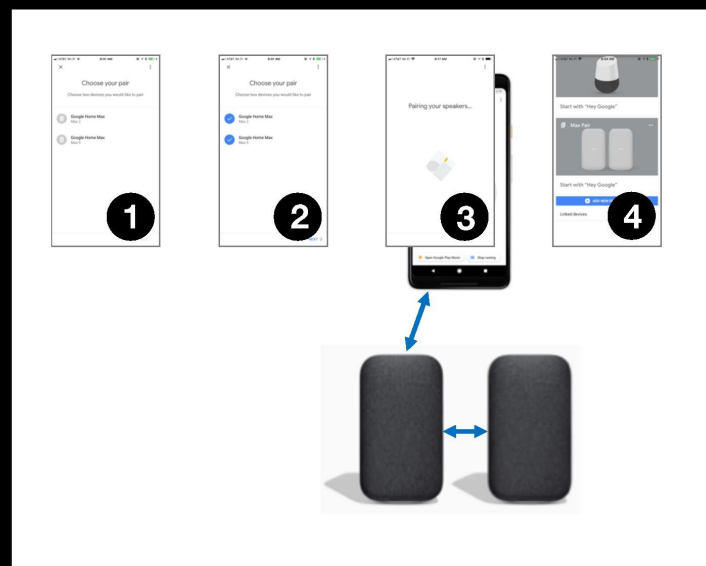
US Patent Application No.: 15/228,685 (Allowed)

SONOS

Title: Making and indicating a stereo pair**Priority Date: 1/25/2011****Issue Date: N/A**

This patent involves a controller device:

1. Displaying an identification (name) of two or more playback devices in a system.
2. Receiving a selection to make a stereo pair of two of the playback devices.
3. Instructing the two playback devices to be configured for playback according to a stereo sound effect.
4. Causing display a name for the stereo pair of the two playback devices.



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SONOS-SVG2-00043255

Making and indicating a stereo pair

U.S. Patent App No. 15/228,685 (allowed); 1/25/2011

1. A method comprising:

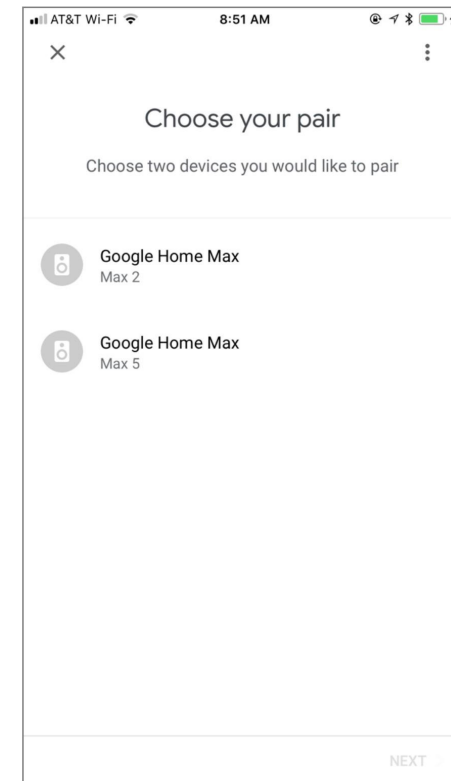
causing, via a controller, a graphical display to display an identification of two or more playback devices in a system, wherein the identification comprises a first name of a first playback device and a second name of a second playback device;

receiving, via the controller, a selection to make a stereo pair of the first playback device and the second playback device;

after receiving the selection to make the stereo pair of the first playback device and the second playback device:

instructing, via the controller over a data network, at least one of the first playback device and the second playback device to be configured for playback according to a stereo sound effect; and

causing, via the controller, the graphical display to display a name for the stereo pair of the first playback device and the second playback device.



Making and indicating a stereo pair

U.S. Patent App No. 15/228,685 (allowed); 1/25/2011

1. A method comprising:

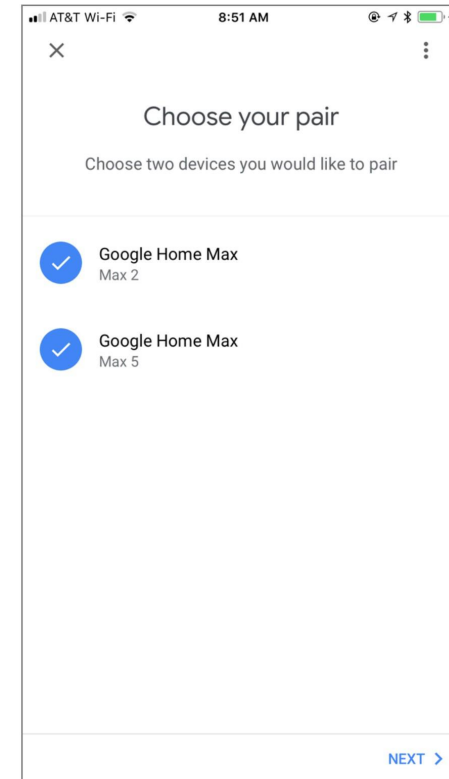
causing, via a controller, a graphical display to display an identification of two or more playback devices in a system, wherein the identification comprises a first name of a first playback device and a second name of a second playback device;

receiving, via the controller, a selection to make a stereo pair of the first playback device and the second playback device;

after receiving the selection to make the stereo pair of the first playback device and the second playback device:

instructing, via the controller over a data network, at least one of the first playback device and the second playback device to be configured for playback according to a stereo sound effect; and

causing, via the controller, the graphical display to display a name for the stereo pair of the first playback device and the second playback device.



Making and indicating a stereo pair

U.S. Patent App No. 15/228,685 (allowed); 1/25/2011

1. A method comprising:

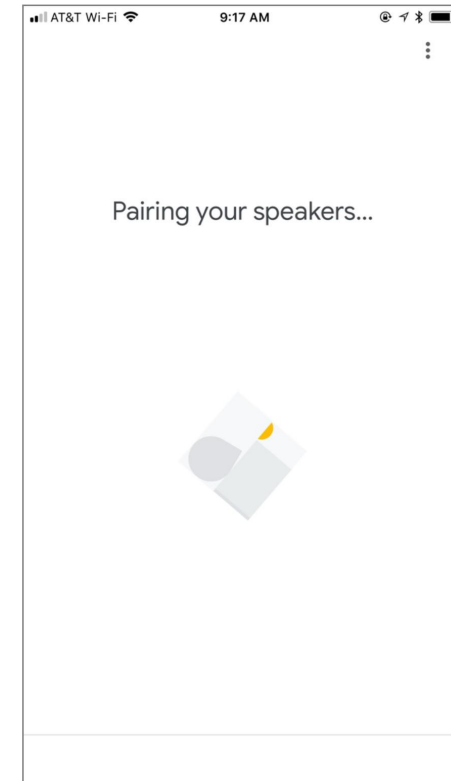
causing, via a controller, a graphical display to display an identification of two or more playback devices in a system, wherein the identification comprises a first name of a first playback device and a second name of a second playback device;

receiving, via the controller, a selection to make a stereo pair of the first playback device and the second playback device;

after receiving the selection to make the stereo pair of the first playback device and the second playback device:

instructing, via the controller over a data network, at least one of the first playback device and the second playback device to be configured for playback according to a stereo sound effect; and

causing, via the controller, the graphical display to display a name for the stereo pair of the first playback device and the second playback device.



Making and indicating a stereo pair

U.S. Patent App No. 15/228,685 (allowed); 1/25/2011

1. A method comprising:

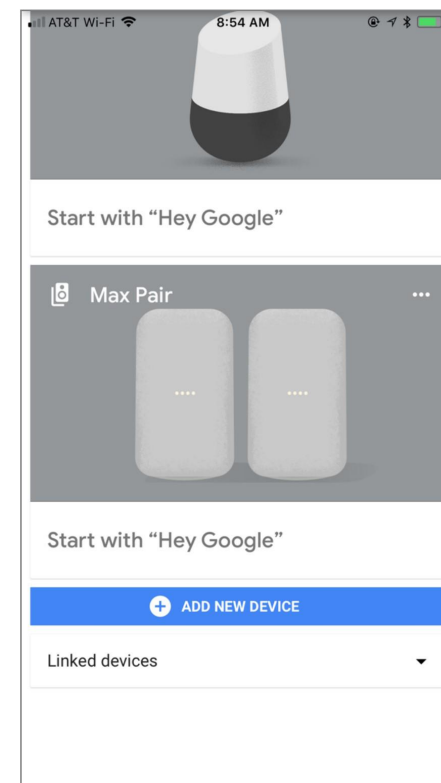
causing, via a controller, a graphical display to display an identification of two or more playback devices in a system, wherein the identification comprises a first name of a first playback device and a second name of a second playback device;

receiving, via the controller, a selection to make a stereo pair of the first playback device and the second playback device;

after receiving the selection to make the stereo pair of the first playback device and the second playback device:

instructing, via the controller over a data network, at least one of the first playback device and the second playback device to be configured for playback according to a stereo sound effect; and

causing, via the controller, the graphical display to display a name for the stereo pair of the first playback device and the second playback device.



US Patent No.: 9,042,556

SONOS

Title: Shaping sound responsive to speaker orientation

Priority Date: 7/19/2011

Issue Date: 5/26/2015

This patent involves a playback device:

1. Receiving audio data.
2. Determining an orientation and configuration state.
3. Shaping sound output to reproduce one of (a) first set of one or more channels or (b) a first frequency range based on first orientation and the configuration state.
4. Shaping sound output to reproduce one of (a) a second set of one or more channels or (b) a second frequency range based on second orientation and the configuration state.



Shaping sound responsive to speaker orientation

U.S. Patent No. 9,042,556; 7/19/2011

1. A method for shaping sound, the method comprising:
 - receiving an audio data stream by a playback device;
 - determining an orientation and a configuration state of the playback device;
 - shaping sound output from a speaker transducer of the playback device using the audio data stream to reproduce at least one of (a) a first set of one or more channels or (b) a first range of frequencies based on a first orientation and the configuration state; and
 - shaping sound output from the speaker transducer of the playback device using the audio data stream to reproduce at least one of (a) a second set of one or more channels or (b) a second range of frequencies based on a second orientation and the configuration state, wherein the configuration state comprises any of: not paired, not grouped, ..., a pairing between the playback device and an additional playback device, a grouping of the playback device with an additional playback device,



Google Home Max receives audio data stream

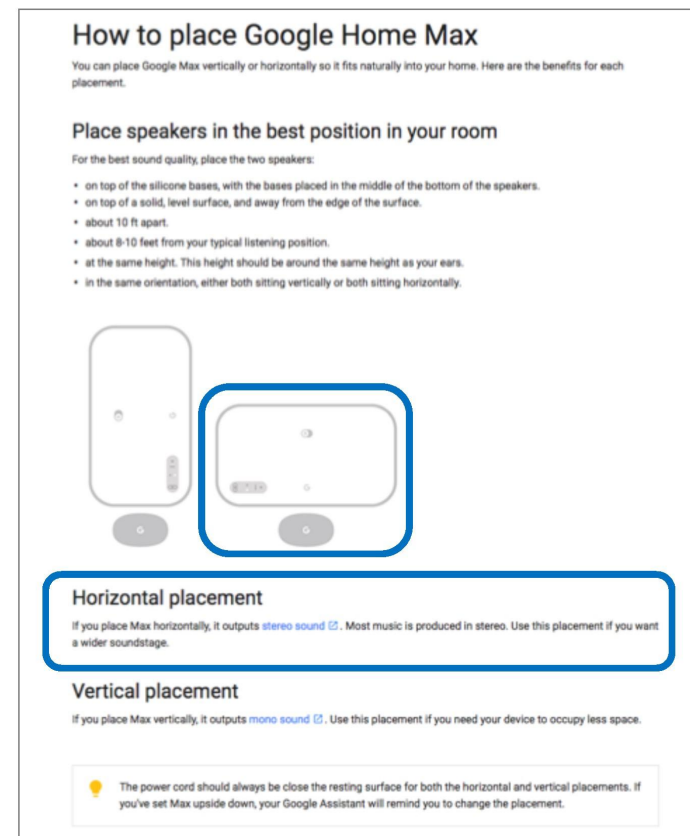
* see claim 1 of U.S. Patent 9,042,556 for complete claim language

Shaping sound responsive to speaker orientation

U.S. Patent No. 9,042,556; 7/19/2011

1. A method for shaping sound, the method comprising:
 receiving an audio data stream by a playback device;
 determining an orientation and a configuration state of the playback device;
 shaping sound output from a speaker transducer of the playback device using the audio data stream to reproduce at least one of (a) a first set of one or more channels or (b) a first range of frequencies based on a first orientation and the configuration state; and
 shaping sound output from the speaker transducer of the playback device using the audio data stream to reproduce at least one of (a) a second set of one or more channels or (b) a second range of frequencies based on a second orientation and the configuration state, wherein the configuration state comprises any of: not paired, not grouped, ..., a pairing between the playback device and an additional playback device, a grouping of the playback device with an additional playback device,

* see claim 1 of U.S. Patent 9,042,556 for complete claim language



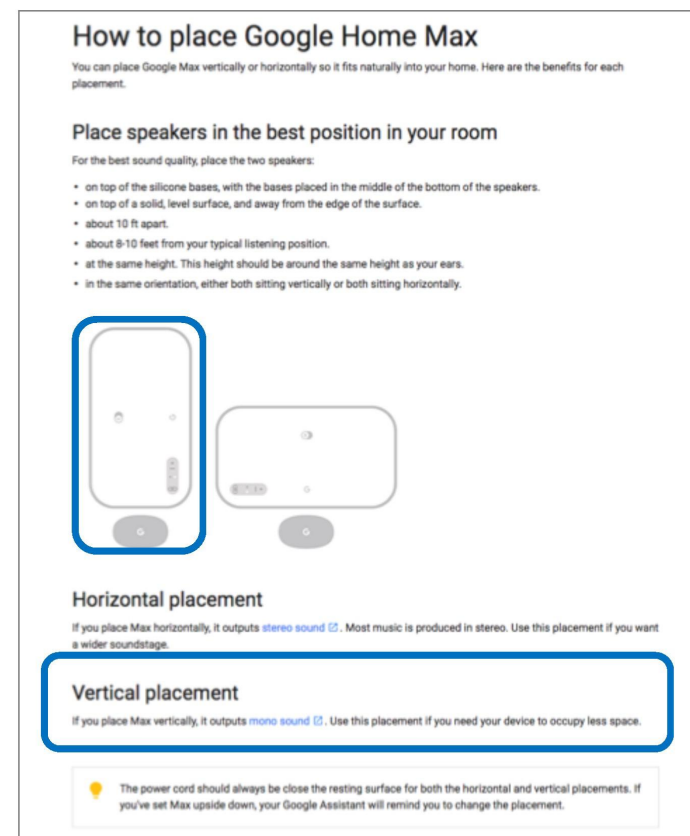
* <https://support.google.com/googlehome/answer/7584544?hl=en>

Shaping sound responsive to speaker orientation

U.S. Patent No. 9,042,556; 7/19/2011

1. A method for shaping sound, the method comprising:
 receiving an audio data stream by a playback device;
 determining an orientation and a configuration state of the playback device;
 shaping sound output from a speaker transducer of the playback device using the audio data stream to reproduce at least one of (a) a first set of one or more channels or (b) a first range of frequencies based on a first orientation and the configuration state; and
 shaping sound output from the speaker transducer of the playback device using the audio data stream to reproduce at least one of (a) a second set of one or more channels or (b) a second range of frequencies based on a second orientation and the configuration state, wherein the configuration state comprises any of: not paired, not grouped, ..., a pairing between the playback device and an additional playback device, a grouping of the playback device with an additional playback device,

* see claim 1 of U.S. Patent 9,042,556 for complete claim language



* <https://support.google.com/googlehome/answer/7584544?hl=en>

Shaping sound responsive to speaker orientation

U.S. Patent No. 9,042,556; 7/19/2011

1. A method for shaping sound, the method comprising:
 - receiving an audio data stream by a playback device;
 - determining an orientation and a configuration state of the playback device;
 - shaping sound output from a speaker transducer of the playback device using the audio data stream to reproduce at least one of (a) a first set of one or more channels or (b) a first range of frequencies based on a first orientation and the configuration state; and
 - shaping sound output from the speaker transducer of the playback device using the audio data stream to reproduce at least one of (a) a second set of one or more channels or (b) a second range of frequencies based on a second orientation and the configuration state, **wherein the configuration state comprises any of: not paired, not grouped, ..., a pairing between the playback device and an additional playback device, a grouping of the playback device with an additional playback device,**

A Google Home Max can operate in configuration states including:

- an individual device by itself
- an individual device in a group
- part of a stereo pair
- part of a stereo pair in a group

A Google Home Max can be in a vertical or horizontal orientation for any of these configuration states.

Based on the combinations of orientations and configuration states, a Google Home Max will reproduce different one or more channels and/or different range of frequencies.

* see claim 1 of U.S. Patent 9,042,556 for complete claim language

US Patent No.: 9,748,647

SONOS

Title: Frequency routing based on orientation

Priority Date: 7/19/2011

Issue Date: 8/29/2017

This patent involves a playback device:

1. Receiving audio data.
2. Determining a change in orientation.
3. Routing a first set of frequencies to speaker drivers when in a first orientation.
4. Routing a second set of frequencies to speaker drivers when in a second orientation.



Frequency routing based on orientation

U.S. Patent No. 9,748,647; 7/19/2011

1. A playback device ... to perform functions comprising:
 - receiving an audio data stream ...;
 - determining, via the at least one orientation sensor, a change in orientation of the playback device from a first orientation to a second orientation, wherein the determining includes (i) detecting for a change in pitch relative to a pitch axis of the playback device and (ii) detecting for a change in roll relative to a roll axis of the playback device, ...;
 - routing a first set of frequencies in the audio data stream to at least one of the plurality of speaker drivers when the playback device is in the first orientation; and
 - routing a second set of frequencies in the audio data stream to the at least one of the plurality of speaker drivers when the playback device is determined to be in the second orientation, wherein the first set of frequencies is different than the second set of frequencies.



Google Home Max receives audio data stream

* see claim 1 of U.S. Patent 9,748,647 for complete claim language

Frequency routing based on orientation

U.S. Patent No. 9,748,647; 7/19/2011

1. A playback device ... to perform functions comprising:
 - receiving an audio data stream ...;
 - determining, via the at least one orientation sensor, a change in orientation of the playback device from a first orientation to a second orientation, wherein the determining includes (i) detecting for a change in pitch relative to a pitch axis of the playback device and (ii) detecting for a change in roll relative to a roll axis of the playback device, ...;
 - routing a first set of frequencies in the audio data stream to at least one of the plurality of speaker drivers when the playback device is in the first orientation; and
 - routing a second set of frequencies in the audio data stream to the at least one of the plurality of speaker drivers when the playback device is determined to be in the second orientation, wherein the first set of frequencies is different than the second set of frequencies.

“When you prop the speaker [vertically], an **internal orientation sensor** recognizes that and switches to mono playback” – Android Police, January 4, 2018¹

“In horizontal mode, the Max provides stereo sound, but if you turn it to vertical, it will switch to mono output. An **internal orientation sensor** handles the switch automatically” – The Verge, December 20, 2017²

“[Y]ou’ll only get stereo sound in horizontal orientation.... [T]urn it vertically and it will stich over to mono. There’s **an orientation sensor on the inside** that does this all automatically” – Pocket-Lint, January 18, 2018³

¹ <http://www.androidpolice.com/2018/01/04/google-home-max-review-best-expensive-smart-speaker/>

² <https://www.theverge.com/2017/12/20/16797728/google-home-max-smart-speaker-assistant-review>

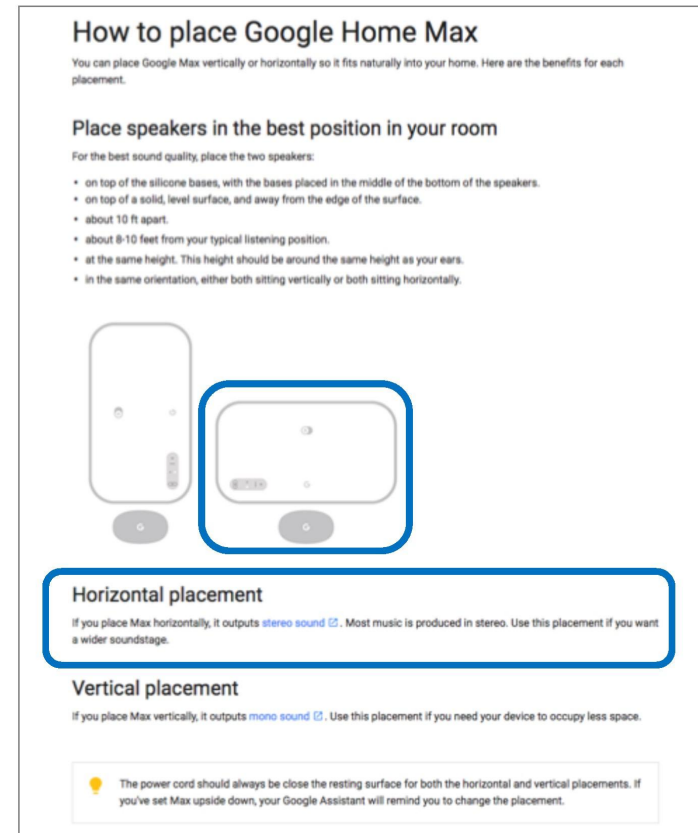
³ <https://www.pocket-lint.com/smart-home/reviews/google/143184-google-home-max-review-turning-smart-home-sound-quality-up-to-11>

* see claim 1 of U.S. Patent 9,748,647 for complete claim language

Frequency routing based on orientation

U.S. Patent No. 9,748,647; 7/19/2011

1. A playback device ... to perform functions comprising:
 - receiving an audio data stream ...;
 - determining, via the at least one orientation sensor, a change in orientation of the playback device from a first orientation to a second orientation, wherein the determining includes (i) detecting for a change in pitch relative to a pitch axis of the playback device and (ii) detecting for a change in roll relative to a roll axis of the playback device, ...;
 - routing a first set of frequencies in the audio data stream to at least one of the plurality of speaker drivers when the playback device is in the first orientation; and
 - routing a second set of frequencies in the audio data stream to the at least one of the plurality of speaker drivers when the playback device is determined to be in the second orientation, wherein the first set of frequencies is different than the second set of frequencies.



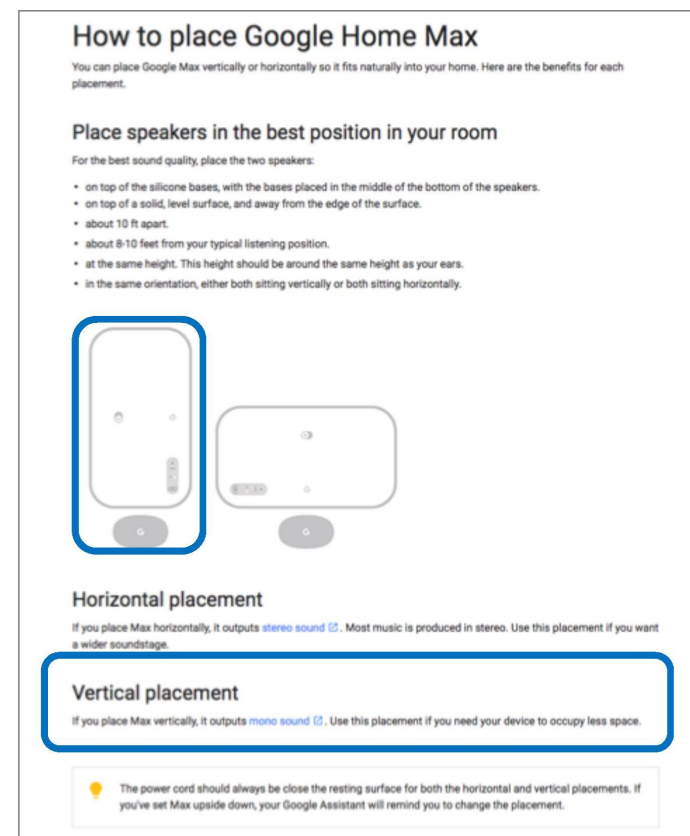
* see claim 1 of U.S. Patent 9,748,647 for complete claim language

* <https://support.google.com/googlehome/answer/7584544?hl=en>

Frequency routing based on orientation

U.S. Patent No. 9,748,647; 7/19/2011

1. A playback device ... to perform functions comprising:
 - receiving an audio data stream ...;
 - determining, via the at least one orientation sensor, a change in orientation of the playback device from a first orientation to a second orientation, wherein the determining includes (i) detecting for a change in pitch relative to a pitch axis of the playback device and (ii) detecting for a change in roll relative to a roll axis of the playback device, ...;
 - routing a first set of frequencies in the audio data stream to at least one of the plurality of speaker drivers when the playback device is in the first orientation; and
 - routing a second set of frequencies in the audio data stream to the at least one of the plurality of speaker drivers when the playback device is determined to be in the second orientation, wherein the first set of frequencies is different than the second set of frequencies.



* see claim 1 of U.S. Patent 9,748,647 for complete claim language

* <https://support.google.com/googlehome/answer/7584544?hl=en>

1/31/18

Confidential and Subject to FRE 408

65

Confidential

SONOS-SVG2-00043269

US Patent No.: 9,671,780

Title: Playback device control

Priority Date: 9/29/2014

Issue Date: 6/6/2017

SONOS

This patent involves a playback device:

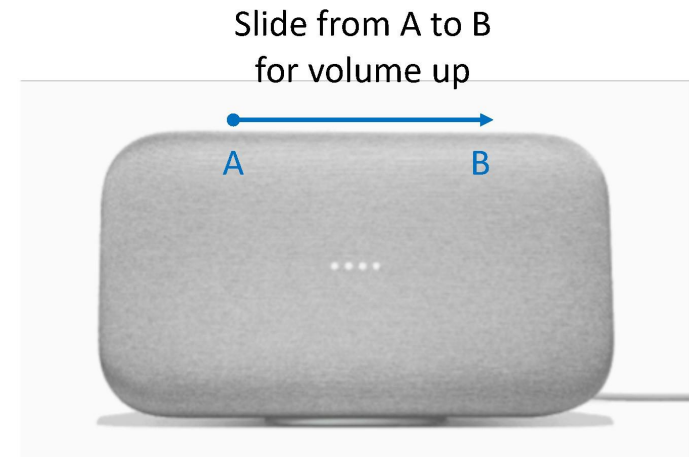
1. While in a given playback state, receiving a physical contact at a given location on the playback device.
2. If playback device is in a first orientation, perform a first playback action.
3. If playback device is in a second orientation, perform a second playback action.



Playback device control

U.S. Patent No. 9,671,780; 9/29/2014

1. A playback device ... to perform functions comprising:
 - while in [a] given playback state, receiving, via the array of proximity sensors, location data indicating a physical contact at a given location on [a] array of proximity sensors;
 - in response to receiving the location data: if orientation data from the orientation sensor indicates that the enclosure is in a first orientation, causing the playback device to perform a first playback action that changes the given playback state of the playback device, the first playback action corresponding to (i) physical contact at the given location ..., (ii) the first orientation, and (iii) the given playback state; and
 - if orientation data from the orientation sensor indicates that the enclosure is in a second orientation, causing the playback device to perform a second playback action that changes the given playback state of the playback device, the second playback action corresponding to (i) physical contact at the given location ..., (ii) the second orientation, and (iii) the given playback state, wherein the second playback action is different from the first playback action.

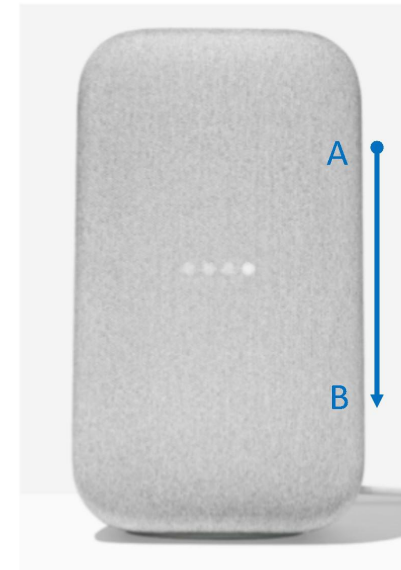


* see claim 1 of U.S. Patent 9,671,780 for complete claim language

Playback device control

U.S. Patent No. 9,671,780; 9/29/2014

1. A playback device ... to perform functions comprising:
 - while in [a] given playback state, receiving, via the array of proximity sensors, location data indicating a physical contact at a given location on [a] array of proximity sensors;
 - in response to receiving the location data: if orientation data from the orientation sensor indicates that the enclosure is in a first orientation, causing the playback device to perform a first playback action that changes the given playback state of the playback device, the first playback action corresponding to (i) physical contact at the given location ..., (ii) the first orientation, and (iii) the given playback state; and
 - if orientation data from the orientation sensor indicates that the enclosure is in a second orientation, causing the playback device to perform a second playback action that changes the given playback state of the playback device, the second playback action corresponding to (i) physical contact at the given location ..., (ii) the second orientation, and (iii) the given playback state, wherein the second playback action is different from the first playback action.



Slide from A to B
for volume down

* see claim 1 of U.S. Patent 9,671,780 for complete claim language

US Patent No.: 9,367,611

SONOS

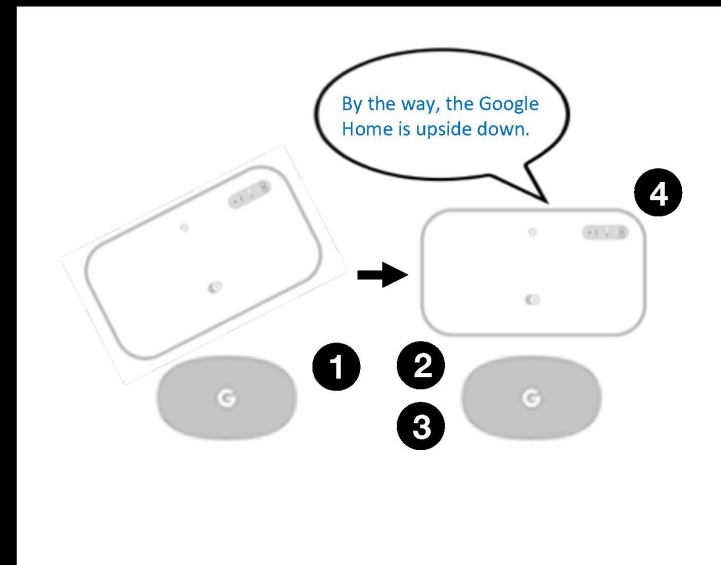
Title: Detecting improper position of a playback device

Priority Date: 7/22/2014

Issue Date: 6/14/2016

This patent involves a playback device:

1. Detecting its position relative to a base.
2. Detecting its orientation.
3. Determining that the detected position does not match reference position for the orientation.
4. Providing an indication that the playback device is improperly position.



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SONOS-SVG2-00043273

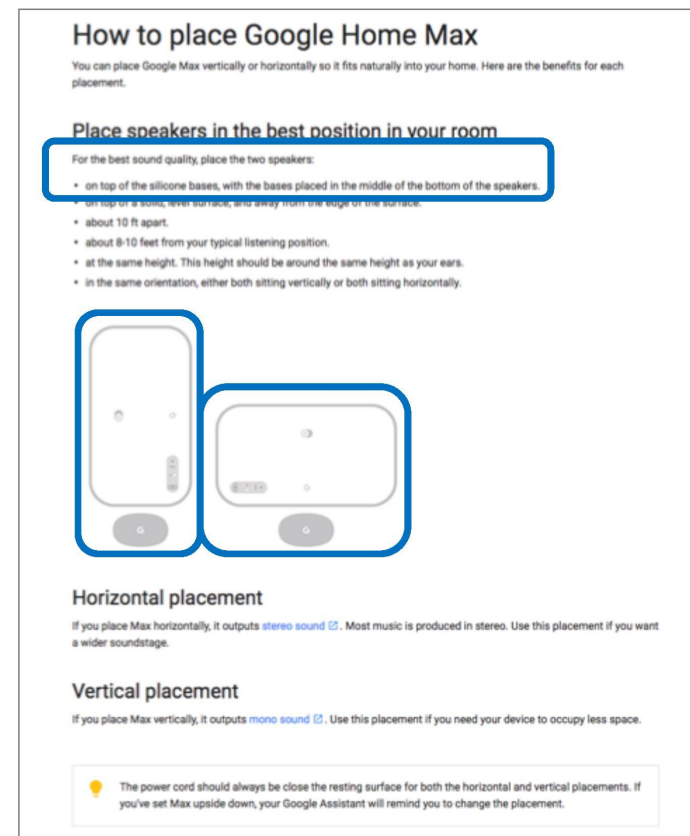
Detecting improper position of a playback device

U.S. Patent No. 9,367,611; 7/22/2014

1. A method comprising:
 - detecting a position of a playback device with respect to a base;
 - detecting an orientation of the playback device;
 - determining that the detected position does not match a reference position for the detected orientation; and
 - responsively, providing an indication that the playback device is improperly positioned.

“The Home Max comes with a [magnetic] base mounted to the bottom of the speaker, but that’s not necessarily the bottom. The Max works in “landscape” or “portrait” mode, so you can peel the rubber base off the bottom and affix it to the right side”
– Android Police, January 4, 2018*

* <http://www.androidpolice.com/2018/01/04/google-home-max-review-best-expensive-smart-speaker/>



* <https://support.google.com/googlehome/answer/7584544?hl=en>

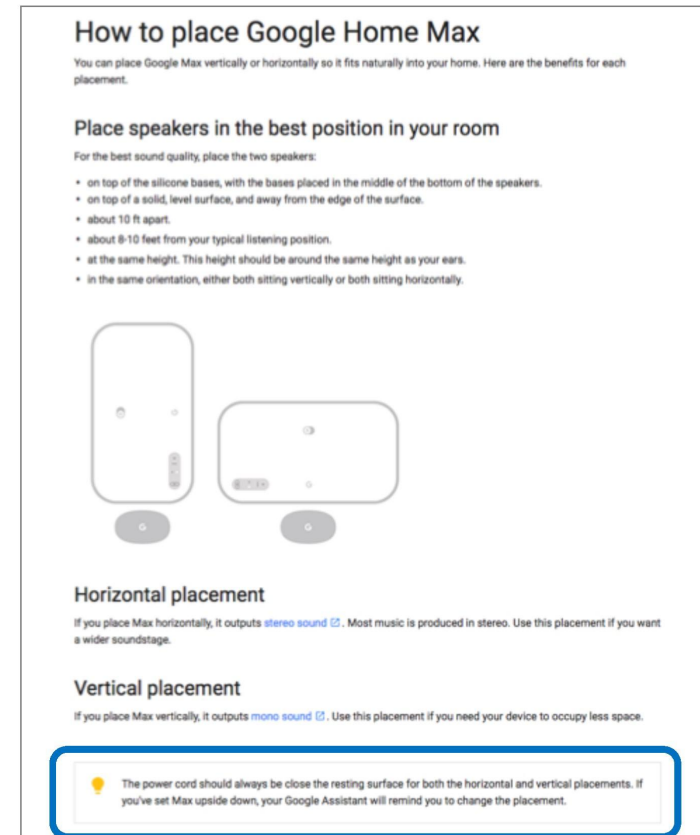
Detecting improper position of a playback device

U.S. Patent No. 9,367,611; 7/22/2014

1. A method comprising:
 - detecting a position of a playback device with respect to a base;
 - detecting an orientation of the playback device;
 - determining that the detected position does not match a reference position for the detected orientation; and
 - responsively, providing an indication that the playback device is improperly positioned.

“An internal orientation sensor handles this switch automatically and it will even tell you if the speaker is placed upside down” – The Verge, December 20, 2017*

* <https://www.theverge.com/2017/12/20/16797728/google-home-max-smart-speaker-assistant-review>



* <https://support.google.com/googlehome/answer/7584544?hl=en>

US Patent No.: 9,219,460

SONOS

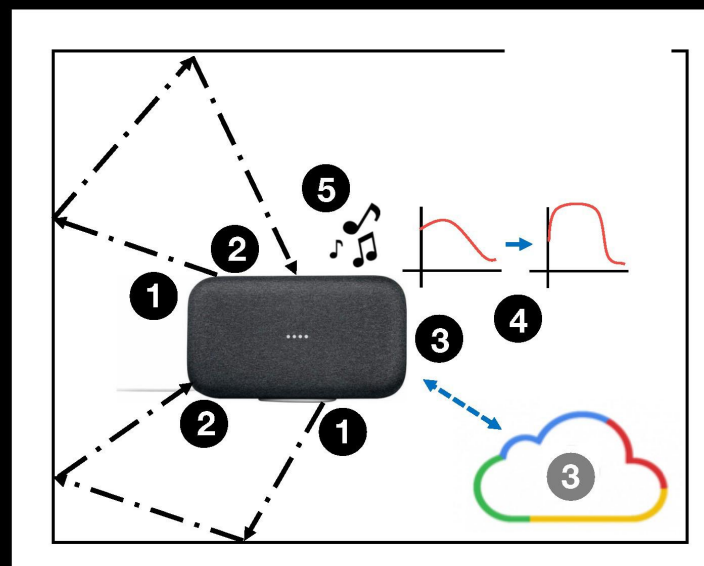
Title: Audio settings based on environment

Priority Date: 3/17/2014

Issue Date: 12/22/2015

This patent involves a playback device:

1. Emitting a first audio signal.
2. Detecting by a microphone of the playback device, a second audio signal comprising a reflection of the first audio signal.
3. Determining reflection characteristics based on the second audio signal.
4. Adjusting an EQ of the playback device based on the reflection characteristics.
5. Causing audio to be played according to the adjusted EQ.



Audio settings based on environment

U.S. Patent No. 9,219,460; 3/17/2014

15. A playback device, comprising:
a speaker;
a microphone that is physically coupled to the speaker;
a processor;
a network interface;
a data storage; and
a program logic stored in the data storage and executable by the processor to:

emit a first audio signal from the speaker;

detect, via the microphone, a second audio signal,
wherein at least a portion of the second audio signal is a
reflection of the first audio signal;

in response to the detecting, determine a first reflection
characteristic based on at least the second audio signal;

adjust an equalization setting of the playback device
based on at least the first reflection characteristic; and

play, via the speaker, an audio track according to the
equalization setting.



“Hey Google, play some music.... It uses 6 internal microphones to measure the acoustics of your room. Then... it adjusts the equalizer settings...”*

* <https://youtu.be/UiBhshQ0FQA>

Audio settings based on environment

U.S. Patent No. 9,219,460; 3/17/2014

15. A playback device, comprising:
- a speaker;
 - a microphone that is physically coupled to the speaker;
 - a processor;
 - a network interface;
 - a data storage; and
 - a program logic stored in the data storage and executable by the processor to:
 - emit a first audio signal from the speaker;
 - detect, via the microphone, a second audio signal, wherein at least a portion of the second audio signal is a reflection of the first audio signal;
 - in response to the detecting, determine a first reflection characteristic based on at least the second audio signal;
 - adjust an equalization setting of the playback device based on at least the first reflection characteristic; and
 - play, via the speaker, an audio track according to the equalization setting.



“Hey Google, play some music.... It uses 6 internal microphones to measure the acoustics of your room. Then... it adjusts the equalizer settings...”*

* <https://youtu.be/UiBhshQ0FQA>

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Audio settings based on environment

U.S. Patent No. 9,219,460; 3/17/2014

15. A playback device, comprising:
- a speaker;
 - a microphone that is physically coupled to the speaker;
 - a processor;
 - a network interface;
 - a data storage; and
 - a program logic stored in the data storage and executable by the processor to:
 - emit a first audio signal from the speaker;
 - detect, via the microphone, a second audio signal, wherein at least a portion of the second audio signal is a reflection of the first audio signal;
 - in response to the detecting, determine a first reflection characteristic based on at least the second audio signal;
 - adjust an equalization setting of the playback device based on at least the first reflection characteristic; and
 - play, via the speaker, an audio track according to the equalization setting.



“Hey Google, play some music.... It uses 6 internal microphones to measure the acoustics of your room. Then... it adjusts the equalizer settings...”*

* <https://youtu.be/UiBhshQ0FQA>

SONOS

US Patent No.: D768,602

Title: Playback device

Priority Date: 4/25/2015

Issue Date: 10/11/2016

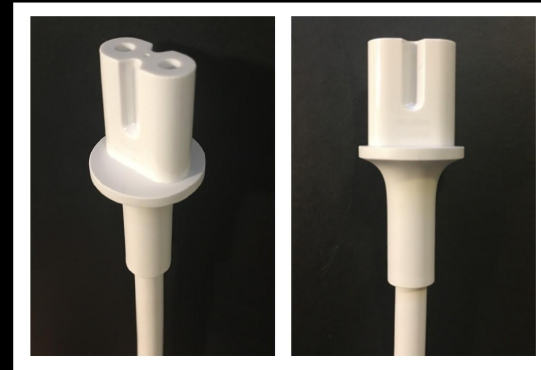


US Patent No.: D796,447

Title: Power plug

Priority Date: 4/8/2015

Issue Date: 9/5/2017



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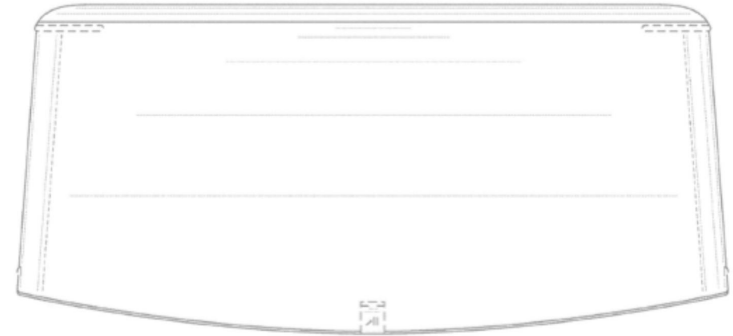
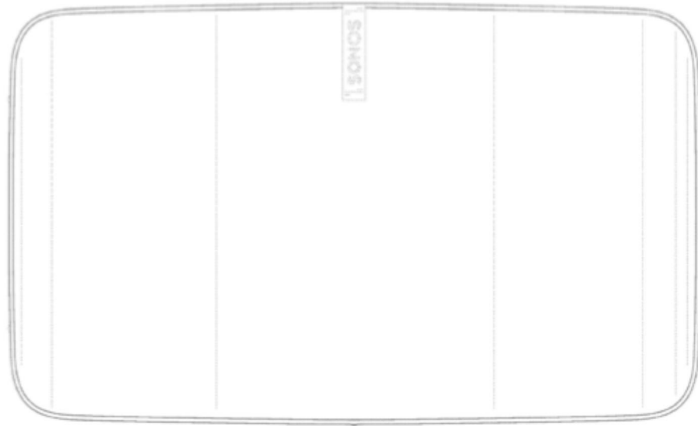
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SONOS-SVG2-00043280

Playback device

U.S. Patent No. D768,602; 4/25/2015



“With the new Play:5, the company revisits its flagship speaker with a stunning new design....” - Gizmodo, October 29, 2015¹

“It’s sleek, minimal and will fit easily into any home, not matter the décor.”
- Tech Radar, November 21, 2017²

“Sonos’ products have always been praised for their design and functionality....” - Engadget, October 29, 2015³

¹ <https://gizmodo.com/sonos-play-5-review-wireless-music-made-elegant-1739240153>

² <http://www.techradar.com/reviews/audio-visual/hi-fi-and-audio/audio-systems/sonos-play5-657133/review>

³ <https://www.engadget.com/2015/10/29/sonos-play-5-review-2015/>

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SONOS-SVG2-00043281

Playback device

U.S. Patent No. D768,602; 4/25/2015



“[A]nyone looking at a Google Home Max wants to know how it compares to Sonos Play:5 and vice versa. **They are too similar in form, price, and function....**” - Liisten, December 22, 2017¹

“It’s a serious speaker – **closer in size to Sonos’ flagship Play:5 than any smart speaker before it....**” - The Verge, December 20, 2017²

“Its size...reminds me of the Sonos Play:5....” - Engadget, December 19, 2017³

¹ <http://liisten.com/google-home-max-vs-sonos-play-5>

² <https://www.theverge.com/2017/12/20/16797728/google-home-max-smart-speaker-assistant-review>

³ <https://www.engadget.com/2017/12/19/google-home-max-review/>

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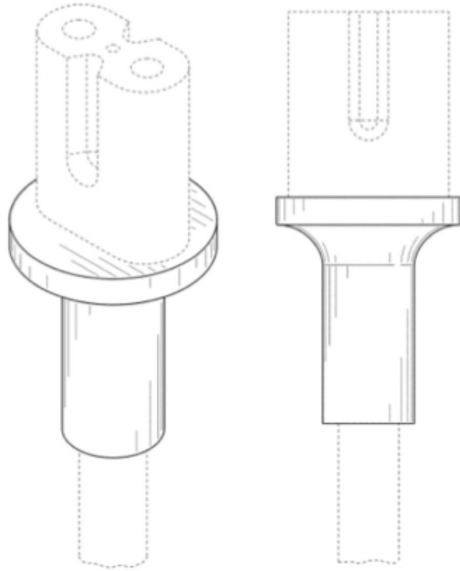
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SONOS-SVG2-00043282

Power plug

U.S. Patent No. D796,447; 4/8/2015



“Sonos is one of very few companies that designs entirely custom power plugs at both ends for no reason other than it wants them to look and feel good.” - Engadget, October 29, 2015*

* <https://www.engadget.com/2015/10/29/sonos-play-5-review-2015/>

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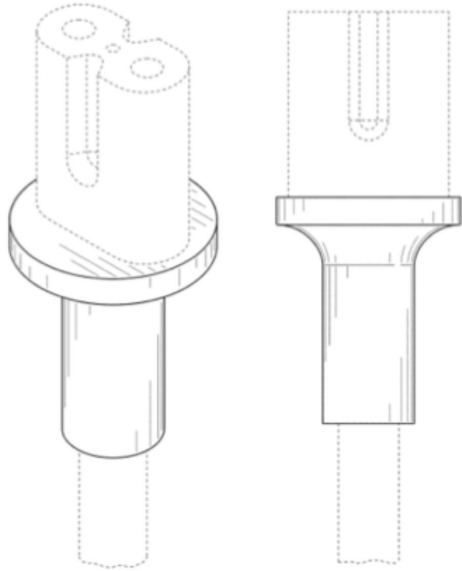
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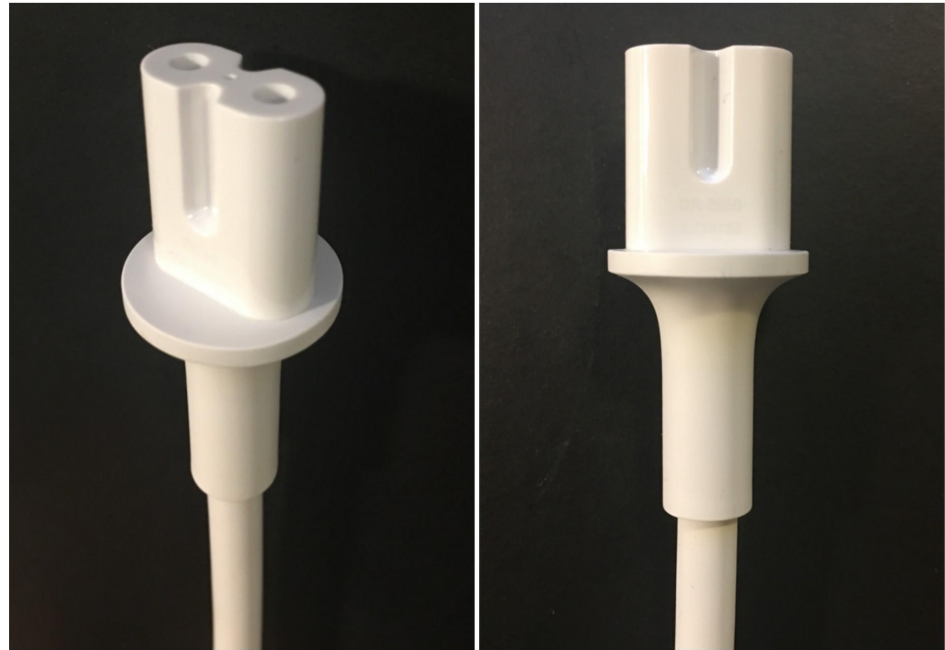
SONOS-SVG2-00043283

Power plug

U.S. Patent No. D796,447; 4/8/2015



Sonos Play:5 power plug



Google Home Max power plug

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SONOS-SVG2-00043284

Subject matter of interest but not touched upon today:

| Audio Content | Platform | Player | Control | Outside Household |
|-----------------------|-----------------------|-------------------------|-----------------------|---------------------------|
| Audio from controller | Group management | Antennae switching | Discover/Find content | Cloud queue |
| Audio from LAN device | Master selection | Audio calibration | Group management | Cross-service integration |
| Audio via WAN | Networking | Audio processing | Playback control | Retail and marketing |
| Line-in audio switch | Queue management | Industrial Design | Queue management | Social queues |
| | Setup | Fault tolerance | Setup | |
| | Stereo pair | Microphone switching | Social (Party mode) | |
| | Synchronized playback | Networking | User interface design | |
| | Voice assistant | Orientation-based audio | Volume control | |
| | | Orientation check | | |
| | | Playback control | | |
| | | Power management | | |
| | | Queue management | | |

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SONOS-SVG2-00043285

The image shows the SONOS logo in a large, white, sans-serif font. Below the logo, the tagline "The Home Sound System" is written in a smaller, white, sans-serif font. The entire text is centered on a solid black background.

SONOS
The Home Sound System

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SONOS-SVG2-00043286